

Claims

What is claimed is:

- 5 1. A method, comprising:  
retrieving an image comprising a plurality of pixels;  
and  
determining at least one probability distribution  
corresponding to the pixels of the image, the step of determining  
10 performed by using a model wherein at least some pixels in the  
image are modeled as being dependent on other pixels.
2. The method of claim 1, wherein the model comprises a  
term representing a probability of a global state of a scene and  
a term representing a probability of pixel appearances  
conditioned to the global state of the scene.
3. The method of claim 2, wherein the pixels of the image  
are considered to be independent in the probability of pixel  
appearances conditioned to the global state of the scene, and the  
probability of pixel appearances conditioned to the global state  
of the scene is modeled as a plurality of probabilities that  
model each pixel of the image.
- 25 4. The method of claim 1, wherein the method further  
comprises the steps of:  
providing a training image to the model;  
determining parameters of the model; and  
performing the step of providing a training image and  
30 determining parameters for a predetermined number of training  
images.

5. A method, comprising:

determining a global state that maximizes a likelihood probability of an image comprising a plurality of pixels;

determining, for each of at least one pixels of an image, an individual likelihood probability; and

assigning, for each of at least one pixels of an image, a pixel to a foreground when the pixel has a predetermined individual likelihood probability.

10 6. The method of claim 5, wherein the step of assigning, for each of at least one pixels of an image, a pixel to a foreground when the pixel has a predetermined individual likelihood probability further comprises the step of assigning, for each of the at least one pixels of an image, a pixel to a foreground when the pixel has an individual likelihood probability below a pixel threshold.

15 7. The method of claim 5, further comprising the step of determining a plurality of states associated with a camera view.

20 8. The method of claim 7, wherein the step of determining a plurality of states further comprises the steps of:

determining a most likely global state for a sample image;

25 determining a most likely mixture of Gaussian modes;

determining a likelihood probability of the sample image for the most likely global state;

determining if the likelihood probability of the sample image is greater than a global threshold;

30 adding a new state when the likelihood probability of the sample image is less than or equal to the global threshold; and

adjusting parameters of the most likely global state when the likelihood probability of the sample image is greater than the global threshold.

5 9. The method of claim 8, further comprising the steps of, for each of the at least one pixels:

determining a likelihood probability for a mixture of Gaussian modes associated with the pixel;

10 adjusting parameters of a Gaussian mode for the pixel when the likelihood probability for the mixture of Gaussian modes associated with the pixel is greater than a pixel threshold; and

adding a new Gaussian mode when the likelihood probability for the mixture of Gaussian modes associated with the pixel is less than or equal to a pixel threshold.

10. The method of claim 5, further comprising creating a segmented image from the at least one pixel, the segmented image comprising foreground and background pixels, wherein the foreground pixels are represented as one value and the background pixels are represented as another value.

11. The method of claim 5, wherein the likelihood probability of the image and the likelihood probabilities for the pixels are determined according to a probability model.

12. The method of claim 11, wherein the model comprises a term representing a probability of a global state of a scene and a term representing a probability of pixel appearances conditioned to the global state of the scene.

13. The method of claim 11, wherein the model is trained through the following steps:

providing a training image to the model;

determining parameters of the model; and

5 performing the step of providing a training image and determining parameters for a predetermined number of training images.

14. A system comprising:

10 a memory that stores computer-readable code; and

a processor operatively coupled to said memory, said processor configured to implement said computer-readable code, said computer-readable code configured to:

determine a global state that maximizes a likelihood of probability of an image comprising a plurality of pixels;

15 determine, for each of at least one pixels of an image, an individual likelihood probability; and

assign, for each of at least one pixels of an image, a pixel to a foreground when the pixel has a predetermined individual likelihood probability.

15. An article of manufacture comprising:

25 a computer-readable medium having computer-readable code means embodied thereon, said computer-readable program code means comprising:

a step to determine a global state that maximizes a likelihood of probability of an image comprising a plurality of pixels;

30 a step to determine, for each of at least one pixels of an image, an individual likelihood probability; and

a step to assign, for each of at least one pixels of an image, a pixel to a foreground when the pixel has a predetermined individual likelihood probability.